CHAPTER 12 – DESIGN

1.0 General Information

1.1. The policies and procedures contained in this section are appropriate for most Capital Improvement Projects designed by a project architect/engineer. Not every item will apply to every capital improvement project and should be negotiated with the negotiating committee on unrestricted projects and with the agency on restricted projects.

1.2. When the project architect's or project engineer's construction estimate exceeds the agency's programmed construction budget, approved at the initial fee negotiation, it is the responsibility of the agency to assist the firm in identifying options and means (including a decrease in scope, material selection, and/or alternates, etc.) to bring the firm's estimate within the programmed budget.

2.0 Concept Design

2.1.1. The project architect/engineer shall involve all necessary consultants and develop at least three alternative solutions to the design of the capital improvement project. The alternative solutions shall (when applicable) be within the structure of the agency's program and shall address but not be limited to:

2.1.2. Approach to code compliance for life safety issues, per Chapter 7.

2.1.3. Accessibility compliance, per Chapter 7.

2.1.4. Site limitations, including utilities.

2.1.5. Building location on site.

2.1.6. Vehicular and pedestrian circulation.

2.1.7. Number of floors.

2.1.8. Arrangement of programmed spaces

2.1.9. Itemized inventory of programmed space, indicating surplus or deficiency.

2.2. Concept design submittal shall include the items listed below and shall follow the submittal and review procedures.

2.2.1. Compliance with applicable codes, standards and laws, per Chapter 7.

2.2.2. Site plans, including site utility locations, which may be sketched.

2.2.3. Floor plans, which may be sketched but must include all programmed spaces.

2.2.4. Elevations, which may be sketched and need not show all sides of the building.

2.2.5. Written description of proposed utilities, electrical, mechanical and HVAC systems, principal components and special functional requirements.

2.2.5.1. Information indicating how Energy Code Compliance will be met. (Section 5)

2.2.5.2. Concepts and studies of systems required by the program or fee negotiations.

2.2.6. Cost estimate of each alternative approach.

2.2.7. LEED Plan, if applicable.

2.2.8. Special considerations.

3.0 Schematic Design

3.1. One concept will be selected to proceed with schematic design.

3.2. The schematic design submittal shall include the items listed below and shall follow the submittal and review procedures.

3.2.1. **Code footprint** per Chapter 7 and compliance with all other applicable codes, standards and laws, including accessibility.

3.2.2. Site plan showing the location of the building on the site, illustrating the practical use of the natural topography and indicating existing utility locations, service routes, drives, parking, pedestrian traffic ways and expansion possibilities if required by the program.

3.2.3. Floor plans showing room arrangement, designation, size and changes in floor elevation.

3.2.4. Elevation sketches of the exterior indicating the general architectural character of the building.

3.2.5. As a minimum, single-line drawings showing mechanical, electrical and plumbing equipment locations, preliminary ductwork and proposed piping runs, routing of major utilities, i.e. sewer and water, and all other engineering elements required for coordination.

3.2.6. Compliance with applicable federal regulations due to a federal agency's involvement in the project.

3.2.7. Written statement giving the total gross area of the building and estimate of construction costs.

3.2.8. Special considerations

4.0 Design Development

4.1. The design development submittal shall include the items listed below and shall follow the submittal and review procedures. This submittal should demonstrate a complete understanding of the design requirements to the Owner and should identify items of particular interest to the Owner. Upon the approval of the design development submittal, a design freeze will occur. No significant changes will be made to the approved plans, unless approved by the negotiating committee.

4.1.1. The Construction Document Checklist FPDC Form 223 available under “Planning Forms” at the DFM website www.da.ks.gov/fp/ is to be used throughout the entire design and construction document phases of the project. It is intended to guide the design team to provide a complete set of construction documents.

4.1.2. Code footprint per Chapter 7 and compliance with all other applicable codes, standards and laws, including accessibility.

4.1.3. Site plan showing the location of the building on the site, illustrating the practical use of the natural topography, expansion possibilities if required by the program, utility locations and potential connections, and vehicle and pedestrian circulation including but not limited to streets, service drives, parking and sidewalks.

4.1.4. Knowledge and indication of problems of rock excavation or controlled backfill.

4.1.5. Floor plans showing room arrangement, overall dimensions of the building(s) and spaces room arrangement, door swings, casework, special equipment and features, furniture arrangement, designation, size and fixed equipment layout.

4.1.6. Elevations showing all exterior wall surfaces.

4.1.7. Building sections including longitudinal and transverse sections showing major structural components.

4.1.8. Wall sections showing typical and special wall construction.

4.1.9. Special interior wall sections

4.1.10. Preliminary finish schedule.

4.1.11. Structural concept showing the location, type and tentative size of structural members.

4.1.12. Mechanical plans showing mechanical room layouts, locations of major equipment and preliminary two-line ductwork layouts. Mechanical room layouts must accommodate more than one manufacturer. Provide graphical indication of code required maintenance/access spaces.

4.1.13. Update the written description provided with the concept design to reflect any changes in the systems/equipment or approach to the design, including energy code compliance.

4.1.14. Provide a written description of the HVAC control systems with a general outline of function and sequence of operation.

4.1.15. Plumbing concept showing pipe chases and roof drainage system. Plumbing designs for laboratories or other special facilities, materials, and designs requiring pumping shall also be included.

4.1.16. Electrical concept showing the power source, service to the building, panel locations, types of fixtures, and the foot candle levels. Also included shall be primary and secondary voltages to be used and design criteria for unusual or special electrical requirements. Provide graphical indication of code required maintenance/access spaces.

4.1.17. Fire Alarm concept showing panel location(s) and a description of the system. Project architect/engineer will review minimum design requirements to be shown on construction documents.

4.1.18. Fire Suppression concept showing the service entry including back flow preventor, the main drain/inspector test station and a description of the system. Project architect/engineer will review minimum design requirements to be indicated shown on construction documents.

4.1.19. Specifications outline shall include a brief yet concise description of all building systems including methods, materials and finishes. All building components shall be outlined in sufficient detail to afford judgment discussions concerning quality and performance. Include material cut sheets as required to convey a complete understanding of the materials used.

4.1.20. Compliance with applicable federal regulations due to a federal agency's involvement in the project.

4.1.21. Updated written statement giving the total gross area of the building and a**n** estimate of all construction costs.

4.1.22. Rendering when negotiated as part of the firm's contract.

5.0 Energy Code Compliance

5.1. On all new buildings or additions, a COMcheck report verifying compliance with the 2006 Edition of the International Energy Conservation Code (IECC) or ASHRAE 90.1-2007 shall be provided with the design development submittal. COMcheck is a free program provided by the US Department of Energy and can be downloaded from their website.

5.2. When the project is a renovation, retrofit or repair, the COMcheck report, or other specific information, verifying compliance with the 2006 Edition of the IECC or ASHRAE 90.1-2007 will only be required on systems or components being replaced or altered.

END OF CHAPTER 12